

**SOUTH CAROLINA
DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL
AIR POLLUTION CONTROL REGULATIONS AND STANDARDS**

**REGULATION 61-62.7
GOOD ENGINEERING PRACTICE STACK HEIGHT**

SECTION I. GENERAL

The purpose of this regulation is to prevent the use of tall stacks or other dispersion techniques from affecting the emissions limitations required to meet National Ambient Air Quality Standards (NAAQS) or Prevention of Significant Deterioration (PSD) increments. This Regulation does not, in any manner, restrict the actual physical stack height nor the actual use of dispersion techniques at any source. Rather, it sets limits on the maximum credit for stack height and other dispersion techniques which can be used in ambient air quality modeling for the purpose of setting an emission limitation and calculating the air quality impact of a source. Sources requiring modeling must use Good Engineering Practice (GEP) Stack Height. Credit for dispersion techniques is prohibited.

SECTION II. APPLICABILITY

This regulation applies to all stacks excluding flares which were not “in existence” before December 31, 1970. The regulation also applies to stack heights or dispersion techniques at sources which were reconstructed or under major modification after December 31, 1970.

SECTION III. DEFINITIONS AND CONDITIONS

For the purpose of determining GEP stack heights and other parameters applicable to modeling, the following definitions and conditions apply.

A. Stack “in existence” - A stack on which the owner or operator had (1) begun, or caused to begin, a continuous program of physical on-site construction or (2) entered into binding agreements or contractual obligations which could not be canceled or modified without substantial loss to the owner or operator to undertake a program of construction to be completed in a reasonable time.

B. “Dispersion Technique”

1. Any technique which attempts to affect the concentration of a pollutant in the ambient air by:

- a. Using that portion of a stack which exceeds good engineering practice stack height;
- b. Varying the rate of emission of a pollutant according to atmospheric conditions or ambient concentrations of that pollutant; or
- c. Increasing final exhaust gas plume rise by manipulating source process parameters, exhaust gas parameters, stack parameters, or combining exhaust gases from several existing stacks into one stack; or other selective handling of exhaust gas streams so as to increase the exhaust gas plume rise.

2. Paragraphs 1a, b, and c above do not include:

a. The reheating of a gas stream, following use of a pollution control system for the purpose of returning the gas to the temperature at which it was originally discharged from the source generating the gas stream;

b. The merging of exhaust gas streams where:

(i) The source owner or operator demonstrates that the process was originally designed and constructed with such merged gas streams;

(ii) After July 8, 1985 such merging is part of a change in operation at the plant that includes the installation of pollution controls and is accompanied by a net reduction in the allowable emissions of a pollutant. This exclusion from the definition of "dispersion techniques" applies only to the emission limitation for the pollutant affected by such change in operation; or

(iii) Before July 8, 1985 such merging was part of a change in operation at the plant that included the installation of emissions control equipment or was carried out for sound economic or engineering reasons. Where there was an increase in the emission limitation or, in the event that no emission limitation was in existence prior to the merging, an increase in the quantity of pollutants actually emitted prior to the merging, the Department shall presume that merging was significantly motivated by an intent to gain emissions credit for greater dispersion. Without a demonstration by the source owner or operator that merging was not significantly motivated by such intent, the Department shall deny credit for the effects of such merging in calculating the allowable emissions for the source;

c. Smoke management in agricultural or silvicultural prescribed burning programs;

d. Episodic restrictions on residential woodburning and open burning; or

e. Techniques which increase final exhaust gas plume rise where the resulting allowable emissions of sulfur dioxide from the plant do not exceed 5,000 tons per year.

C. "Good Engineering Practice" (GEP) Stack Height

The greater of:

1. 65 meters, measured from the ground-level elevation at the base of the stack;

2. $H_g = H + 1.5L$,

where:

H_g = good engineering practice stack height, measured from the ground-level elevation at the base of the stack,

H = height of nearby structure(s) measured from the ground-level elevation at the base of the stack,

L = lesser dimension, height or projected width of nearby structure(s)

The Department or EPA may require the use of a field study or fluid model to verify GEP stack height for the source; or

3. The height demonstrated by a fluid model or a field study approved by the Department and EPA which ensures that the emissions from a stack do not result in excessive concentrations of any air pollutant as a result of atmospheric downwash, wakes, or eddy effects created by the source itself, nearby structures or nearby terrain

features.

D. "Nearby"

1. For the purpose of applying the formula provided in paragraph C.2. above, nearby means that distance up to five times the lesser of the height or the width of a structure, but not greater than 0.8 km (2 mile), and

2. For conducting demonstrations under paragraph C.3. above, nearby means not greater than 0.8 km (2 mile), except that a portion of a terrain feature may be considered "nearby" when:

a. at a distance of 0.8 km (2 mile) from the stack the height of the feature is at least 40% of the GEP (as determined by the formula in paragraph C.2. above) or 26 meters, whichever is greater; and,

b. the portion of the terrain feature must be within 10 times the maximum height of the feature, but not more than 2 miles, from the stack.

All heights are measured from the ground-level elevation at the base of the stack.

E. "Excessive Concentration"

For the purpose of determining good engineering practice stack height under C.3. above.

1. For sources seeking credit for stack height exceeding that established under C.2. above, excessive concentration means a maximum ground-level concentration resulting from stack emissions which are due in whole or part to downwash, wakes, and eddy effects produced by nearby structures or nearby terrain features which is at least 40 percent in excess of the maximum concentration experienced in the absence of such downwash, wakes, or eddy effects and which contributes to a total concentration due to emissions from all sources that is greater than an ambient air quality standard;

2. For sources seeking credit for stack height exceeding that established under C.2. above, and where such sources are subject to the Prevention of Significant Deterioration program, excessive concentration means a maximum ground-level concentration resulting from stack emissions which are due in whole or part to downwash, wakes, or eddy effects produced by nearby structures or nearby terrain features which is at least 40 percent in excess of the maximum concentration experienced in the absence of such downwash, wakes, or eddy effects and greater than a Prevention of Significant Deterioration increment.

3. The allowable emission rate to be used in making demonstrations under E.1 or E.2 shall be prescribed by the new source performance standard that is applicable to the source category unless the owner or operator demonstrates that this emission rate is infeasible. Where such demonstrations are approved by the Department, an alternative emission rate shall be established in consultation with the source owner or operator;

4. For sources seeking credit after October 11, 1983, for increases in existing stack heights up to the heights established under paragraph C.2. above, excessive concentration means either:

a. a maximum ground-level concentration due in whole or part to downwash, wakes or eddy effects as provided in E.1. or 2. above, except that the emission rate specified by any applicable Regulation (or, in the absence of such a limit, the actual emission rate) shall be used; or

b. the actual presence of a local nuisance caused by the existing stack as determined by the Department;
and

5. For sources seeking credit after January 12, 1979 for a stack height determined under C.2. above where the Department requires the use of a field study or fluid model to verify GEP stack height, for sources seeking stack height credit after November 9, 1984 based on the aerodynamic influence of cooling towers, and for sources seeking stack height credit after December 31, 1970 based on the aerodynamic influence of structures not adequately represented by the equation in C.2. above, excessive concentration means a maximum ground-level concentration due in whole or part to downwash, wakes or eddy effects that is at least 40 percent in excess of the maximum concentration experienced in the absence of such downwash, wakes, or eddy effects.

SECTION IV. PUBLIC PARTICIPATION

For any source whose emission limitation is based on a G.E.P. stack height which exceeds that allowed by Section III C.1 or 2 above, the public will be notified of the availability of the demonstration study and the opportunity for a public hearing will be provided.

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